

REMARKS

Claims 1, 2, 4-19 are pending in the present application.

Applicants wish to thank Examiner Kerr for the helpful and courteous discussion with their undersigned Representative on July 7, 2003, and for the suggestions to address the rejections under 35 U.S.C. §112, first and second paragraphs. In addition, Applicants wish to thank Examiner Kerr for the indication that the previous objections to the abstract, the specification, and the claims have been withdrawn (paper number 15, paragraphs 5-9). Applicants would also like to thank Examiner Kerr for the indication that the rejection of Claims 1-2 and 4-8 under 35 U.S.C. §112, second paragraph (paper number 15, paragraphs 10-12), the rejection of Claims 1-3 and 6-8 under 35 U.S.C. §112, first paragraph (paper number 15, paragraphs 13-14), the rejection of Claims 3 and 6 under 102(b) over Guardiola et al (paper number 15, paragraph 17), and the rejection of Claims 1 and 6 under 102(b) over Smith et al (paper number 15, paragraph 18) have been withdrawn.

The rejections of Claims 4-5 and 12-18 under 35 U.S.C. §112, first paragraph, are obviated by amendment.

Claim 4, as amended herein, now recites:

An isolated DNA encoding a large subunit and a small subunit of acetohydroxy acid synthase isozyme III originating from *Escherichia coli*,

wherein the unmutated sequence of the small subunit of acetohydroxy acid synthase isozyme III is SEQ ID NO:2 and wherein said small subunit has a mutation that replaces the

glycine residue at amino acid number 14 in SEQ ID NO: 2 with an amino acid other than glycine and has at least one mutation selected from the group consisting of:

a) a mutation that replaces the serine residue at amino acid number 17 in SEQ ID NO: 2 with an amino acid other than serine,

b) a mutation that replaces the asparagine residue at amino acid number 29 in SEQ ID NO: 2 with an amino acid other than asparagine, and

c) a mutation that replaces the glutamine residue at amino acid number 92 in SEQ ID NO: 2 with a stop codon,

wherein the mutated acetohydroxy acid synthase isozyme III catalyzes the generation of (i)  $\alpha$ -acetolactate from pyruvate and (ii)  $\alpha$ -aceto- $\alpha$ -hydroxybutyrate from  $\alpha$ -ketobutyrate and pyruvate; and wherein inhibition by L-valine is reduced to 50% or less by said mutation compared to the unmutated sequence of the small subunit of acetohydroxy acid synthase isozyme III is SEQ ID NO:2 (see Claim 4).

With respect to the Examiner's rejection of Claims 4-5 under this section of 35 U.S.C. §112, Applicants note that the Examiner is most concerned with the lack of a specific definition of the unmutated structure. Therefore, since the mutations in Claims 4-5 exclusively occur in the small subunit of acetohydroxy acid synthase isozyme III, Applicants have amended Claim 4 as shown above to specifically recite: "wherein the unmutated sequence of the small subunit of acetohydroxy acid synthase isozyme III is SEQ ID NO:2 and wherein said small subunit has a mutation that replaces the glycine residue at amino acid number 14 in SEQ ID NO: 2 with an amino acid other than glycine and has at least one mutation selected from the group consisting of..."

Moreover, the Examiner concedes in paper number 15, page 7, lines 18-20, that the "large AHAS subunit from *E. coli* is structurally described in the art and functionally described in the specification having the catalytic activity as found on page 6 of the specification." Accordingly, Applicants believe that Claims 4-5 now provide clear structural limitations and, as such, these claims are adequately described in the present application.

MPEP §2164.05(a) states:

The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public...

Therefore, the clear description provided in the claims coupled with the art-recognized knowledge, would provide adequate descriptive support for present Claims 4-5. Claims 16-18 relate to a bacterium harboring the DNA that encodes the mutations of SEQ ID NO:2 set forth in Claim 4. These bacteria are described in painstaking detail in the specification at, for example, page 11, line 13 to page 15, line 12. Therefore, Applicants submit that Claims 16-18 are also adequately described in the present application.

Claims 12-15 relate to specific mutations of SEQ ID NO:2. The Examiner appears to focus on the exemplification of pILVH612 as the sole example demonstrating that it is free from inhibition by L-valine. However, Applicants note MPEP § 2163.02 states:

An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." *In re Gostelli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989).

Applicants note that the Example, which the Examiner points to, is a clear demonstration of to the artisan of how one may effortlessly assess whether a particular mutation falls within or without the present claims. Moreover, to clarify the meaning of

Claims 12-15, Applicants have amended Claim 4 as shown above to recite, in part: "wherein inhibition by L-valine is reduced to 50% or less by said mutation compared to the unmutated sequence of the small subunit of acetohydroxy acid synthase isozyme III is SEQ ID NO:2." Therefore, the present claims do clearly allow the skilled artisan to recognize what has been invented and what is claimed is adequately described in the specification within the meaning of 35 U.S.C. § 112, first paragraph.

Withdrawal of this ground of rejection is requested.

The rejections of Claims 4-5 and 12-18 under 35 U.S.C. §112, second paragraph, are obviated by amendment.

The Examiner has rejected these claims based on the failure to include a "definition of the unmutated structure" (paper number 15, paragraphs 15 and 20). Applicants note that Claim 4, and the claims dependent therefrom, relate to mutations made in the small subunit of acetohydroxy acid synthase isozyme III originating from *Escherichia coli*. Therefore, to provide the proper framework to support the mutations thereof, Applicants have amended Claim 4 to specify that "the unmutated sequence of the small subunit of acetohydroxy acid synthase isozyme III is SEQ ID NO:2." Moreover, as defined on page 9, lines 6-7, the nucleotide sequence of the *ilvIH* operon is known and bears the Genbank/EMBL/DDBJ accession number X55034, where *ilvH* corresponds to the small subunit and *ilvI* corresponds to the large subunit (see page 3, lines 1-3). MPEP §2164.05(a) states:

The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public...

Therefore, it is believed that in view of the definition provided in the claims and the specification, Claims 4-5 and 12-18 are definite within the context of 35 U.S.C. §112, second paragraph.

Withdrawal of this ground of rejection is requested

The rejection of Claims 1, 2, 6-8, 10, and 11 under 35 U.S.C. §112, second paragraph, is obviated by amendment.

Claim 1 has been amended in accordance with the Examiner's kind suggestion. Specifically, Applicants have amended Claim 1 to replace the phrase "which mutation is selected from the group consisting of..." with the phrase "which has a mutation selected from the group consisting of..."

As such, withdrawal of this ground of rejection is requested.

Applicants note the Examiner's indication that new formal drawings are required to replace the proposed drawing changes submitted with the Amendment and Request for Reconsideration on March 20, 2003. Applicants interpret the Examiner's requirement for submission of new formal drawings, as well as the indication that the objection to the specification for confusing descriptions of disclosed sequences has been withdrawn based on the amendment to Figure 2, as indicating that the proposed drawing changes has been accepted. Accordingly, Applicants thank the Examiner for this indication and submit herewith new formal drawings for the Draftsman's review.

With respect to the non-elected claims drawn to methods of producing L-valine (see Claims 9 and 19), Applicants remind the Examiner that MPEP §821.04 states:

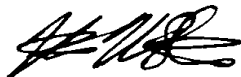
...if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined.

Accordingly, upon a finding of allowability of the elected product claims, Applicants respectfully request rejoinder of the withdrawn process claims.

Applicants submit that the application is now in condition for allowance, and early notification of such action is earnestly solicited.

Respectfully submitted,

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